ABSTRACT

          This document examines the role of technology and the
school library in education. Teachers and librarians are embracing
information technology (IT) to meet children's educational and
socio-cultural needs. Their relationship with other information
providers, especially public libraries, is becoming more significant.
Children's school experiences are directly influencing the impact of
IT on their parents, and hence on society at large. There has been
rapid development in technology to facilitate learning by providing
computers and other technology. The Internet and CD-ROMs are among
the information sources used by librarians, and it is important that
these resources be utilized effectively. (Contains 80 references.)
(AEF)

NEW MEDIA, NEW OPPORTUNITIES?

THE DEVELOPING ROLE OF THE SCHOOL LIBRARY

IN TEACHING AND LEARNING

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Where is the Life we have lost in living? Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?   (T.S.Eliot, The Rock, Part 1, 1934)

THE CONTEXT FOR CHANGE

'Surf city here we come' is the kind of statement now emanating from the educational press: a message not only from the UK but also from across the world. The information superhighway is being heralded as the greatest of the new technologies, changing lives and education. The present information highway, the Internet, can be connected to school computers relatively cheaply - a few hundred pounds - using a telephone line, and offers apparently limitless access to the world's information riches. Teachers and pupils can even converse with world specialists on the net. Take this example from one science class in an English school:

One pupil was investigating craters and crater sizes. He was dropping ball bearings into sand and hit a snag. So I helped him post a message to a physics 'news group' and a day later heard back from a top NASA scientist, who sent in ideas and pages from a book he'd written.[1]

Why bother with a textbook?

But the net is not the only technology offering opportunities for teachers and pupils to move beyond the school in accessing information. Television is still an important teaching and learning medium, as are disk resources, CD-ROMs and media which are no longer new, but which revolutionised much of teaching from the 1960s through the 80s. Tape-slides, audio and video cassettes, even films in some schools (although Weston Woods and other major suppliers have moved many of theirs into video format now) are still valued.

The role of technology today, though, is usually seen to mean the role of information networking in the sense offered in the example above. In most countries we have now absorbed much of the rest of technology into the everyday world of the school. It is the role of the information highway and the school that I particularly want to explore today in the context of the range of technologies being used to support learning. Not only the opportunities, but also what is unspoken in the title, but a very real concern - the threats and barriers to schools. Nothing is cost or value free, and financial and time resources are finite. Emphasis (over-emphasis?) on one resource has to be balanced against less time and money for others, especially books. The book is still a portable, aesthetically pleasing, cheap and personalised medium that is hard to beat for quality and value. Whether it is still the most effective deliverer of *information* might now be more debatable, but as the rising numbers of children's books being issued from Britain's public libraries can testify,[2] children read for many reasons other than the 'quick fix' of a discrete piece of information.

Acquiring knowledge, and eventually wisdom, takes time and effort. The Internet and other technologies may encourage just the instant response, the hasty electronic mail message and gathering of the first

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information to hand. Learning to sift sources, to discriminate and to think is even more important than the ability to gather in vast quantities of information: and much, much more complex. A library with a range of media and resources, real as well as virtual, still offers the reading and learning experiences which can enrich children's lives as well as their wider information skill development. The librarian, too, is important for helping to deal with this complexity. More pragmatically, verbal and visual literacy have to be acquired first and books remain the bedrock of these.

Undoubtedly, the driving forces behind the new media are unstoppable. Teachers and librarians are therefore rightly embracing information technology to meet children's educational and wider socio-cultural needs. They are building on the basic literacies to prepare children for an information saturated world. The National Curriculum for England and Wales has been an important stimulus in the UK, with IT a core subject from primary through to secondary education. [3] Pupils at Key Stage 4 (up to 16 years of age) are now expected to have skills which only a few years ago would have been more usually taught in university undergraduate programmes:

> They identify the advantages and limitations of different data-handling applications... design computer models or procedures, with variables, which meet identified needs... select the appropriate IT facilities for specific tasks, taking into account ease of use and suitability for purpose... design successful means of capturing and, if necessary, preparing information for computer processing

Perhaps most significant, pupils learn to 'use IT to organise, refine and present information in different forms and styles... [and] select the information needed for different purposes, check its accuracy and organise and prepare it...' The Department for Education's call for responses to their recent document on the future of superhighways for education is but the latest of these UK developments.[4]

Curriculum change has inevitably meant that libraries are responding to new roles and recent research has assessed how these might be

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enhanced using both traditional and new media. [5,6,7,8]. Perhaps the most difficult of all aspects to grasp has been IT's impact on the wide-ranging sociological, technological, economic and political changes in society. And, in turn, on all of those involved in teaching and learning - teachers, pupils, parents, employers, as well as librarians. Methods of accessing information are changing. Finding out what actually happens when new media are made available in schools and how it affects these stakeholders is an important area being investigated. [9]

The relationship with other information providers, especially public libraries, is also becoming more significant. Technology is its own driver: the fact of increasing cable link-ups means that information networking is a reality not just a vision for the future. [10] Almost all homes in the UK are likely to be cabled up to a broad-band network within the next ten years, with fibre optic conections to every school, public library, health centre and hospital.[11] Other countries are even further ahead, with many of the major cabling companies installing cables into schools in the US, for example, as a public service.[12] In his State of the Union Address in January 1994, President Clinton stated that:

> We must work with the private sector to connect every classroom, every clinic, every library, and every hospital in America to a national information superhighway by the year 2000.[13]

Changes in education are an important element in this tooling up for the future, with children's school experiences directly influencing the impact of IT on their parents, and hence on society at large. Children are bringing their IT skills into the home. By 1992, nearly six in ten households in Britain with children aged between 5 and 15 had a home computer, more than four times the proportion of households without children. More than nine in ten had a colour television, with half of 7 to 10 year olds having a TV in their own room, and nearly seven in ten of 11 to 14 year olds.[14] There is a clear analogy with the impact of children's literacy in the eighteenth century on the adult population. Then, too, it was the children who brought new media into the home. Remember John Clare? Both his parents were 'illiterate to the last degree'; it was the young Clare who brought them books from the travelling chapmen and the experience of reading.[15] Perhaps our

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information society is not so different, then, from that of earlier societies, despite changes in the technology of information transfer. Questions of the ownership of information, access and cost have been issues since the first mechanisation of printing. Universality of access and ease of use are what distinguish this revolution from that begun by Gutenberg, but the revolutionary nature of the changes in communicating information is strikingly similar. [16]

Children are comfortable with the new multimedia, they switch with ease from computer to television to book, exploiting each medium for their own needs. Any problems in using new media, or perceptions of threat to the book, have tended to lie with adults not children. For children, the context of rapid technological change is an accepted fact of their world. Difficulties are more likely to lie with helping them to exploit the new media most profitably. Teachers, librarians - and parents - need the knowledge and foresight to guide young people through the information maze and provide them with the skills to navigate it more effectively.

TECHNOLOGY AS A SUPPORT TO TEACHING AND LEARNING

There has been rapid development over recent years in the availability of various technologies in schools to support these skills and facilitate teaching and learning across the curriculum. This has been very marked in the US. From routine computer applications in educational management: word processing, accounting and timetabling, to interactive media, simulations and remote access to databases.[17] Computers have been used across all of the school's functions.[18] In the UK, too, there has been recognition that schools need to use IT as a broad support to their management in order to become more efficient, as well as exploiting computers within the classroom. Following the 1988 Education Reform Act, local management of schools has been implemented, with schools responsible for their own budgetary control. With this has come the assumption that schools should plan, that resources should be more accountable and that school managers should be accountable for achieving plans.[19] Consequently, there is more need for information to support planning and resource allocation and for monitoring and control. Computerised management information systems

offer greater efficiency in the increased information-processing activities now needed in schools, and can also provide better communication to teachers, governors and parents through clearer presentation of data. Many of the systems used in schools have been developed by local education authorities, which also makes comparability of data between schools possible.[20] Technology is therefore being used to support the administrative aspects of teaching and learning as well as classroom and library and information service work within a school. This is a common pattern throughout many developed countries, with varying emphasis on the different needs.

In the US, for example, there appears to be particularly extensive use of IT in the classroom. A 1990 study found that 96% of all public and private elementary and secondary schools had computers.[21] Computer aided learning/instruction (CAL or CAI) in the elementary school developed in earnest in the 1970s and 80s,[22] and has continued to provide new possibilities, especially in the field of special educational needs at both elementary and secondary levels, where improving pupils' motivation and offering positive feedback is so essential. One issue, though, is the speed at which the technology is changing. Built in obsolescence means that budgeting for technology has to be included in schools' plans. [23] There is some danger that libraries will postpone decisions on purchases as they wait for the 'next generation'. [24]

The impact of the National Curriculum in UK schools and the impetus to provide more computers in schools in recent years has had a similar effect to that in the US. More has been spent on computers and other IT. In 1995 there was an average of over 85 computers per secondary school and 10 per primary school and expenditure in English schools on IT had risen from around £20 million in 1984/5 to nearly £180 million in 1993/4 .[25] IT teaching is becoming more closely integrated with other activities as computers spill into every area of school life.

Most exciting of all, has been the way in which school library and information services have exploited technology to support teaching and learning. There promises to be a much clearer integration of the library with schools' main functions as a result, and also the potential for

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enhanced access to more resources. One of the most obvious differences IT has made to many schools is, first, the availability of whole-school resources on OPACs, not just those materials physically situated within the library. Until recenty, and still the case in some places, librarians and teachers maintained card catalogues or used small curriculum-based databases. In the early 1990s, library systems producers began to adapt existing systems to meet the demands from schools and bibliographic data could be downloaded on CD-ROM, so making the task of transferring records onto the computer feasible. [26]

Some schools took a considerable time, though, to come to terms with the technology, especially where those teacher librarians in charge of the library were not computer literate and had only basic librarianship skills. This comment, from the teacher managing a traditional, book-based library in an English grammar school is not untypical:

> For the better part of a decade we had been searching for a computer system that would suit our needs. The system had to be usable by people like me who knew next to nothing about computers.... [27]

There has been the need in those schools without the services of a qualified school librarian (still the general case in the UK) to ensure that systems can be quickly and easily learned. The educational rationale for the system has also needed to be clear. Criteria for choosing systems have therefore been based on the practical benefits to the school and a business-like approach to suppliers. Considerations have been :
- the reputation of the supplier
- the effectiveness of the demonstration of the system
- the useability of the system, including ease of searching
- cost
- availability of support
- plans for future development.[28]

A second way in which libraries have supported IT in teaching and learning has been the provision of computers and other technology within the library, for use by teachers and pupils. The library/resource centre will be a focal point for information provision within those

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schools which have implemented such a policy. As the American Library Association's Guidelines for School Library Media Programs argued, the school library should provide 'an abundance of appropriate learning resources in many formats', together with equipment, space and personnel, but also planned activities and services to help pupils and staff in their interactions with those resources.[29]

What this means in practice is that the librarian will see information from a range of media as a seamless garment. The range of activities carried on in the library will be equally varied and will also be targeted at specific learning outcomes:

> The term school library media center conjures up pictures of: students deeply engrossed in reading - at a table or comfortably sprawled out in a 'reading corner'; students using various information resources, either books or computerized information services; a circle of younger children enjoying a dramatic reading of a story; or a group of students working with the library media specialist in producing a video presentation.[30]

The same concept is implied in the UK Library Association's guidelines for school libraries, although there is not an equal acknowledgement of the changes that IT is making to the kinds of support now required. [31] Partly, this is due to the relatively poor resourcing school libraries in the UK have received. Expectations of requirements are high, but there is an acceptance that basic book buying budgets take priority. The time is probably right for a further policy statement from the UK profession, with guidelines, to consider IT provision and especially the role of the Internet. There have been several studies of aspects of IT use in UK school libraries,[32,33,34] but no overarching consideration of the future role of the library. The current work being undertaken in the National Council for Educational Technology project on 'Libraries of the future' could well provide the basis for such a statement, given the wide remit of their study:

> The project aims to develop a realistic vision of educational libraries of the future, focusing on:
> - the impact of new technologies on access to information and resources;
> - the subsequent changes in the processes of learning;
> - the changing roles of those involved in supporting the learning

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process;
- the skills students need to maximise these opportunities.[35]

There is already some evidence that libraries in the UK are being considered the natural locus of IT activity in schools. Research into the role of school libraries in implementing the National Curriculum found that librarians were being regarded as sources of professional advice and support for teachers and pupils on the use of IT [36] and that IT was a catalyst for change:

> The integration of the library in the school has always been problematic but with IT has come the opportunity for librarians to demonstrate their collaboration with teachers on curriculum delivery more thoroughly than ever before.[37]

In other countries, the picture for school library provision of IT is varied. Finance, as always, is a principal factor. However, there appears to be universal acknowledgement that IT is a major resource and that information networks will play an increasingly important part in supporting teaching and learning.

In Australia, two influential reports considered the range of technologies available and how these might be used to enhance educational access.[38,39] As Clyde notes, these were not isolated reports, but reflected interest in and discussion about technology in education throughout Australia, at state as well as federal level. Online information services, including SAGE (Science and Geography Education), electronic bulletin boards, electronic mail, optical storage media (CD-ROM) and other software have been developed and used in Australian schools, with libraries becoming increasingly involved. However, as in other countries, problems of compatibility as well as acceptability are having to be addressed.[40] Developments built on work in the 1980s with online electronic information systems, systems which were not only useful to teachers as sources of up-to-date information, but which helped in teaching information skills.

The information skills movement, which began in earnest in the early

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80s, with considerable impetus from a UK Schools Council report,[41] resulted in a veritable avalanche of projects in the UK, the US and Australia in individual schools as well as at national levels. In the UK the Microelectronic Support Unit was established to help co-ordinate information on the various UK initiatives for the application of IT in schools. In Australia the School Libraries Section of the Library Association of Australia produced a major report on online information services for schools.[42] Reports expressing pious hopes may, of course be removed from reality, and it was important to identify the impact of projects. In a preliminary study of the use of electronic information systems in Australian schools it was found that, despite interest, motivation and the availability of computers in schools, there remained problems. One was that electronic information systems were not widely accepted in primary schools. The second, and especially concerning for librarians, was that some systems were not situated in the library, but were being seen as the preserve of computer studies departments in schools, with library personnel having minimal input.[43] This was also found to be an issue in one British Library study; librarians had to manage their relationships with subject teachers to establish their role as information specialists. Generally, they were doing so.[44]

In Canada, automation of school libraries developed rapidly from 1989 on; before that the pace of change in schools had lagged behind other information sectors. This mirrors the situation found in other countries, where public libraries, for example, had often been automated and with on-line access much sooner. Acadmic libraries, too, had begun to automate their systems in advance of schools. By 1992, systems were being specially designed for or substantially modified to meet school libraries' needs. Input, storing and display of records in French as well as English were particularly important in the Canadian context.[45,46,47]. Full-text indexing and searching capabilities were being used increasingly, and local area networks implemented. Tooling up to exploit wider information resources on the net was well under way.

Inevitably, the situation in less developed countries lagged behind. In Nigeria, for example, computers were until recently only used within the country for accounting purposes. A review of automated library and

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information services in 1993 found that no school libraries had computerised databases up to that time, although a few schools had begun to introduce computer studies into the curriculum. The difficulty is one of fnancial resources, but also of professional education and training. Librarians and teachers require practical as well as theoretical instruction in how to implement IT in support of teaching and learning.[48]

All of these varied levels of support do beg the question, though, of the actual, as opposed to the intended, impact of IT on pupils' learning. In the US, as in other countries, instruction in the use of computers and other electronic technologies has been in the hands of computer teachers, with backgrounds in the sciences: often computer studies or mathematics. For librarians, it has been difficult to keep up with this level of expertise, especially as the technology changes so rapidly and the applications become more complex.

> Technical literacy demands not only knowledge but also competency with computer hardware and software and other equipment such as optical scanners, modems, videodisc players, and CD-ROM players. All of this equipment operates through intricate networks, fiber-optic cable, advanced on-line information services, or by satellite. While school library media specialists are justifiably overwhelmed by these instructional developments, the need for their services in this area continues to increase. As a result, questions naturally arise concerning the degree of technological mastery that should be required.[49]

But clearly it is essential that librarians do see themselves as partners with teachers, especially those teachers without specialist computing knowledge. The librarian's role is to provide, through the library/resource centre, the mediation between the teacher and the technology which will help support pupils.

There are practical ways of achieving this.

1. Developing IT awareness within the library itself - through updating on IT issues and networking with other IT specialists in the school.
2. Introducing new services gradually, one at a time.

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3. Joining appropriate professional groups.
4. Fitting the library's developments within the school's IT strategy.
5. Being flexible and acknowledging when systems have lost their usefulness.[50]

This pragmatic approach has tended to characterise the examples of successful IT implementation,[51],[52] successful in that they have made a difference to pupils' learning experiences.

OUT WITH THE OLD? NEW AND OLD MEDIA

This last point is crucial. Too often, when dealing with technology, the medium is seen as valuable in itself. The system is the thing.

> The real question to be asked is 'what is gained for users by applying technology to library media functions, facilities, services, collections, and overall programs?'[53]

This is not only true of IT in libraries; the introduction and development of IT throughout the school has tended to fixate on more and better computers, more software, and now, more access to the Internet. Schools have to deal with the realities of young people's experiences. Acknowledging that computer-based resources are becoming more and more important in their lives is, therefore, essential. Resources are available on floppy disc, CD-ROM, and through online resources and services. They are now so numerous that navigating them has become a specialist task.[54]

The Internet is the most exciting of all of the resources now being made available, and also one of the most difficult to control. It began as a US military network, and became linked to educational and research organisations, gradually becoming linked up to similar networks in other countries, including JANET, the UK network for acaedmic institutions. Commercial organisations have also become involved and around 25 million users have been estimated as users worldwide. Users have access to a range of services, including: electronic mail, electronic publishing, bulletin boards, data files, catalogues and illustrated guides, software, maps, newspapers and books in full text.[55]

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However, its huge size not only presents the problem of too much information. The quality of the resources cannot be guaranteed. This means that the role of the information specialist in selecting resources for use in the classroom or library is critical. Guides to the Internet,[56],[57],[58] and the librarian's specialist knowledge in intepreting them, are needed. While the value of Internet resources to children is still being evaluated, the early signs are promising. In one UK project, Project Connect, seven schools are piloting use of the Internet, modelled on similar work in the US. A key part of this project will examine support to special educational needs pupils, who are seen as those likely to benefit greatly from enhanced access to computers.

> As far as our kids are concerned, they have failed with pen and paper...They don't like writing but they'll sit for hours typing a letter at the keyboard...E-mail gives students a sense of common purpose and much more enthusiasm to learn to read and write than books. [59]

Other pupils will be able to view educational information from databases in universities, libraries, museums and government departments around the world. Pupils will download on to the screens of their PCs where they will view it at leisure. There will still, therefore, be the need for children to discriminate amongst the welter of information they gather. Which data are relevant to their particular project, is it accurate, how does it relate to information they may have read or viewed elsewhere - in a book, or a CD-ROM for example? Those nine main steps that pupils follow in completing an assignment, first identified in the 1981 Schools Council study[60] are still relevant:

> What do I need to do?
> Where could I go?
> How do I get to the information?
> Which resources shall I use?
> How shall I use the resources?
> What should I make a record of?
> Havel got the information I need?
> How should I present it?
> What have I achieved?

However, their relevance is also, increasingly, for the teacher or librarian selecting resources to meet pupils' needs on the Internet. Just as with the vast array of published material available worldwide, so it is with with networked resources. Selection is needed. A particular problem has been that of pornography online. A recent study at Carnegie Mellon University found nearly 1 million sexually explicit computer files available, many of them even more explicit tham those found in adult magazines. Government control of the Internet has proved impossible, though, and it is therefore important that information professionals regulate use within schools through the appropriate software.[61] Home use of computers by pupils presents an intractable problem of monitoring access.

CD-ROMs, which now offer a multimedia format combining sound, colour and pupil-computer interaction, have proved more tractable. The ability of pupils to control the pace, depth and direction of their learning has been especially valued by teachers. Since 1991, the Department for Education in the UK has provided around £17 million for projects which put CD-ROM drives and disks into schools.[62] An evaluation of CD-ROM use in schools, carried out in 1992, found, however, that an adequate number of curriculum-relevant disks was not yet available and that there was a danger of pushing hardware into schools before suitable disks were ready. There was also a problem of access. CD-ROM was highly attractive to pupils, and demand was growing. Cost, too, was an issue. Despite these problems, there was felt to be great potential for encouraging students to learn and for bringing together librarians, pupils and teachers in new partnerships.[63] A number of publications from the National Council for Educational Technology has provided support and advice to teachers and librarians in selecting valid resources together.[64,65,66,67]

While these media are being seen as offering new opportunities, the book still remains central to most pupils' learning, even those with special educational needs. The world is paper-print based to a great extent. Also, information books continue to offer more to children than mere information gathering for school purposes. A recent study of children's reading habits found that a combination of information books and novels had helped them with a personal problem, and books about hobbies formed a large proportion of their voluntary reading.[68]

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Much of what has been discussed thus far suggests the ideal: library resource centres plentifully stocked with books, together with a range of new media, and sufficient funding to ensure a balance between them. Realities are frequently different. There is likely to be the need for hard choices at some point. New books to support the National Curriculum or adding a CD-ROM drive. With the Internet, there are hidden costs after schools have found the £200 for the modem and £120 for a year's subscription to a service provider. Just an hour's connection a day will add about £500 a year to a school's telephone bill, or if the service provider is more than a local telephone call away, around double that figure. Controlling access to the Internet and ensuring fast and efficient use will therefore be essential for schools. The services of the librarian as a professional information seeker will be even more essential than in the past to exploit networked information resources.

CD-ROM disks are also frequently expensive and variable in quality. Care needs to be exercised in choosing what will meet the needs of the curriculum. Focusing on planning will help in finding a way through the technology maze and the contradictory benefits/disadvantages of CD-ROM technology. Products can have good search capabilities, or offer little more than a picture on a page, use good graphics or none at all, offer full text or only indexes or citations, be expensive but still cost effective, be well advertised but not reviewed, be easy to use but difficult to install on some computers. Assessing needs, funding options, management strategies and long range planning are aspects of the planning process to be considered.[69] There are further questions that need to be asked before buying CD-ROM disks:

> What are the specific instructional uses for the resource? Quantifying them is important.
> How will pupils obtain the information cited? There may be further cost implications for document delivery.
> What skills learned in using the product can be transferred to other information sources?

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How many teachers would be interested in this resource?
Can a demonstration be arranged and a discussion with a user?
How will the information be updated?
What about the subscription price for the paper index?
Would it be more cost effective to access the data online?
Is there compatible software for the school library's computers?

Similar kinds of questions have to be asked when developing networks between schools and other information providers. Wide area networks offer tremedous potential, possibly even more practical benefits than access to Internet resources. The ACCESS PENNSYLVANIA interlibrary loan network, which began in 1986, offers a union catalogue of public, school, academic and special libraries in a CD-ROM format with over a million titles. Many of the participating schools use an integrated approach to teaching library skills, so that research skills are introduced when pupils need to use the skills in a particular subject. Periodical indexes might be discussed when students prepare reports on current information topics in social studies or science, for example. The resources are then available through the network.[70,71] The importance of such networks is that schools link in to the resources of their communities. Academic and public libraries have huge collections and expertise which could be used within school curricula - if policy can be adjusted and the necessary funding for running costs, maintenance and document delivery released.

Public libraries in the US and UK are now showing more interest in networking through the Internet.[72,73] Almost half of the library authorities in the UK now have OPACs and there is pressure building for librarians to take an active part in developing community access through the Internet.[74] Criticism, too, that the recent Department of Heritage Review of public library services[75] has done little to map the way forward.

> It does little more than hint at how the interconnectivity of
> public libraries can increase the range and quality of services, or
> how the concept of the regional hyperlibrary [proposed by the
> Review team] will change the face of what we do. Are public
> libraries expected to give up some of their traditional core
> functions? How will the funding of these developments be

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achieved, given that currently we have library authorities who cannot or will not make any significant investment? What would a hyperlibrary look like? What would it do? The questions go on and on.[76]

Interconnectivity between public, academic and school libraries will become more and more of a reality as the potential of electronic networks is realised, but political direction is needed to release resources and encourage the will to develop partnerships. This was certainly recognised in the Library and Information Services Council Report, aptly entitled *Investing in children*, in which it was recommended that a Charter for the Child be jointly drawn up by all departments of a local authority and that an integrated strategy be produced to meet the child's information needs, encompassing public libraries, school libraries, the schools library services (usually provided centrally by the public library service to support individual school libraries[77]) and involving other agencies.[78]

The new opportunities for schools lie not only in the kinds of distant connection noted at the beginning of this lecture - talking to a NASA scientist about a basic physics problem - but in tieing in to these locally available resources. In my own university, we are excited by the possibility being opened up by network connections, using the university as a gateway, for schools, colleges, public libraries and research institutions in Leicestershire. A commercial cable supplier sees the potential for extending their market and cabling local institutions as well as homes. Access to the Internet will be the goal, but sharing training and technical support will be equally important. This kind of initiative will answer the needs identified by the National Commission on Education:

> to move the emphasis away from the technology itself towards the educational solutions it provides through central exploration, experimentation, evaluation, and promotion;

> to improve access to expertise and models of implementation through attention to diffusion of good ideas on methods of implementation and availability of ongoing support;

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to establish a strategic approach to the use of IT in each institution, with each developing an overall planning framework.[79]

There are other, more extreme scenarios: that libraries as we know them will disappear and the book become obsolete. Some of this is to be welcomed - anyone on the Internet can click through Library of Congress exhibits - some terrifying. The chaos of global diffusion of media could mean that information loses meaning as it splinters into ever more discrete bits.[80] There is so far no sign that books will indeed lose out; book sales remain buoyant and publishers are responding imaginatively to the challenges. The role of the author may change as 'free' information becomes accessible through networks, but the need for information specialists to sift information and ensure that children and young people receive a quality product and are taught the necessary skills to discriminate for themselves, looks set to remain for the future. Locally led initiatives promise to exploit the best of this expertise and target resources most effectively in order to make some sense out of the information revolution for young people.

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